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Thames Science Center

AUG. & SEPT. 1971

NATURALIST NOTEBOOK

AUG.-SEPT. 1971 VOLUME VII NO. 7

FRONT COVER

"COMMON EGRETS"
Photo by Dade Thornton

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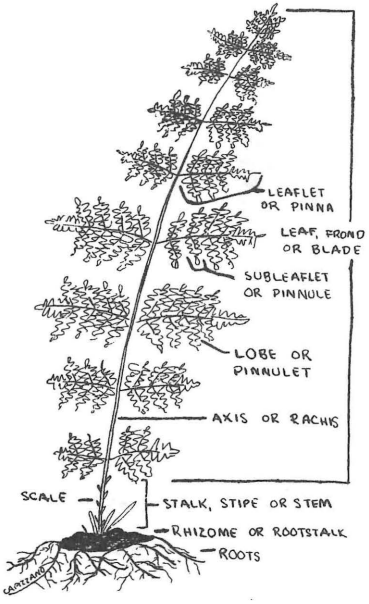
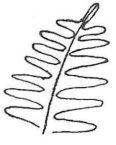
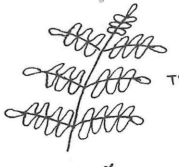
AUGUST and SEPTEMBER THE MONTHS OF FERNS

The study of ferns in late summer is ideal; their characteristics are generally more precise then. And there are relatively few species...about 100 in the U.S. ...but they may nevertheless be confusing. An amateur fern enthusiast remarked, "They still all look alike. I just have different names for them now!"

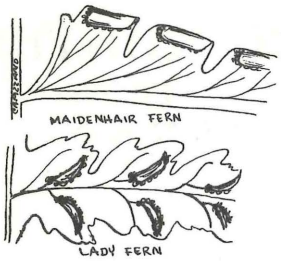






Learning the proper terminology of fern parts is essential. Also, the basic form of different ferns varies. They can be: 1. Simple: the frond is cut into simple leaflets or pinna. 2. Twice-cut: pinna are again cut into subleaflets or pinnules, and 3. Three-cut: the frond is cut into leaflets, the leaflets into subleaflets, and subleaflets cut into lobes.

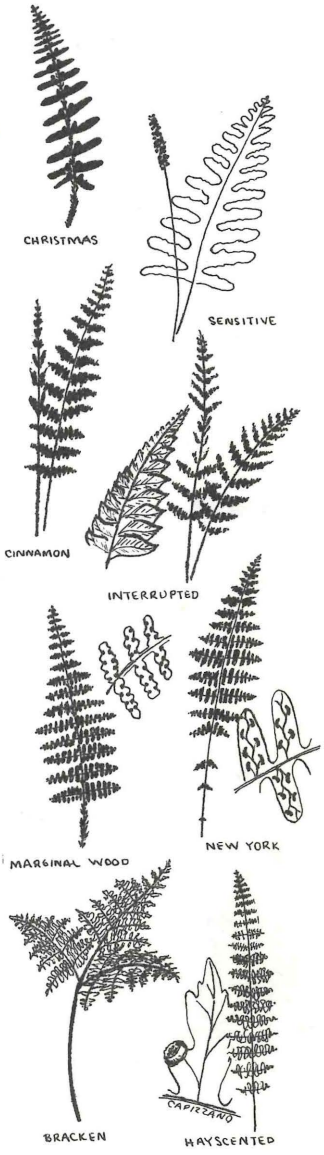
Ferns have a unique life cycle that make them easy to study. In most ferns, leaves of two kinds can be recognized. The sterile leaves are entirely vegetative in function, but the fertile fronds produce spores on the underside which first appear as extremely small green specks. In late summer the spores mature into larger, dark brown spots. Then during dry weather, they push through the covering of the spore case called the indusium. In a suitable spot they develop into gametophytes which contain sex



organs. Fertilization occurs and an egg develops into an independent true fern which will mature and promote another life cycle.

The form of indusium varies with different species, and is therefore a feature of great value for identification. It may be circular, spherical, kidney-shaped, elongated, or whatever.

A few of Connecticut's ferns, their characteristics and pictures are below.



ONE-CUT FERNS

- Christmas
  - Pinna eared at axis
- Sensitive
  - Fertile stalk beaded

TWO-CUT FERNS

- Cinnamon
  - Fertile leaf slender, erect, cinnamon color (spring)
- Interrupted
  - Fertile leaf interrupted
  - Overlapping subleaflets
- Marginal Wood Fern
  - Indusium on pinnule edge
- New York
  - Lower leaflets diminish rapidly in size at base

THREE-CUT FERNS

- Bracken
  - Branched in 3's
- Hayscented
  - Light green, lacey

M. M. C.

THE AUGUST and SEPTEMBER CALENDAR

August and September are the months of migrating birds and insects over brightly flowered fields.

Aug. 1...Sweet Pepperbush comes into bloom.

Aug. 6...The full Sturgeon Moon.

Aug. 6...Fall shore bird migration begins.

Aug. 10...Mars is the closest to Earth in 15 years.

Aug. 12...Cardinal Flower blooms in woodland wet spots and Rose Mallow flowers in salt marshes.

Aug. 15...Marsh Hawks return to wetlands, flying low in search of rodents.

Aug. 19...Monarch butterflies begin to migrate South.

Aug. 28...Marsh Fleabane and Salt Marsh Aster can be found in coastal wetlands.

Aug. 31...Blue-winged Teal and Black Ducks have begun migrating South.

Sept. 4...Blackpoll Warblers, our most common northern warbler, is migrating through Conn.

Sept. 4...The full Corn moon.

Sept. 7...Tree Swallows flock along wires before migrating South.

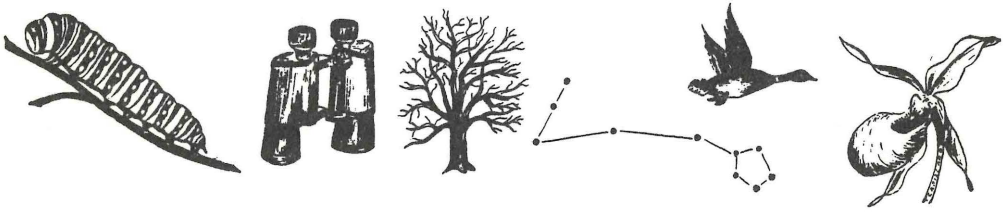
Sept. 8...White-throated Sparrows arrive for the winter.

Sept. 15...The Golden Plover migrates along our coasts in its journey from the Arctic to Argentina.

Sept. 23...Autumn begins at 11:45 A.M.

Sept. 26...Day equals night --12 hours each.

Sept. 29...Baldpates and Red-breasted Mergansers, two of our winter ducks, arrive in coastal waters.



HEADS UP!

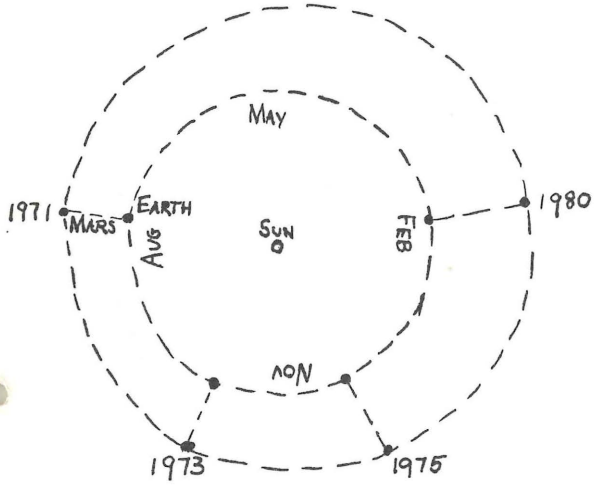
by Robert L. Dyer

August is the time to observe the planet Mars through a small telescope. Mars, being the 4th planet from the sun, revolves about the sun in 687 days. Since Earth requires only 365 days to orbit "Old Sol", we are forever overtaking and passing Mars. When the Earth is between Mars and the sun, Mars is said to be in opposition to the sun. Since the orbit of Mars is eccentric, i. e., elliptical rather than circular, it is possible for the Earth-Mars distance to vary from 34. 6 million to 62. 9 million miles. Successive oppositions occur at intervals of 2 years and 50 days. Oppositions occuring closest to the earth will be repeated in 7 or 8 intervals or every 15 to 17 years. On August 10, 1971 Mars will be 35 million miles away from Earth making this opposition the closest since 1924. It follows that if Mars is closer, then its apparent diameter will be larger, and it is for this reason that observation through a small telescope at this time is most satisfactory.

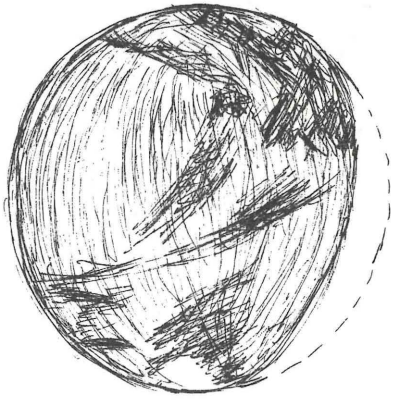
What can one reasonably expect to see while observing Mars? That will depend mainly on three things--1. your telescope, 2. the steadiness of the atmosphere or seeing, and 3. your own eyes and experience.

Telescopes of 3 to 6 inches of aperture are needed for detailed observation of the numerous markings on the planet's surface; however, even a one inch telescope will show the white polar caps and the dark irregular markings known as "continents".

As any amateur astronomer knows, our earth is surrounded by a layer of air, our atmosphere, through which all earthbound astronomers must peer. This wet, windy, dusty, smoggy, variable-temperatured envelope changes constantly from second to second resulting in an overall fuzzy, shaky image in the telescope which, on rare occasions, will hold steady for a moments good seeing. An ex-



← RELATIVE ORBITS OF MARS AND EARTH.

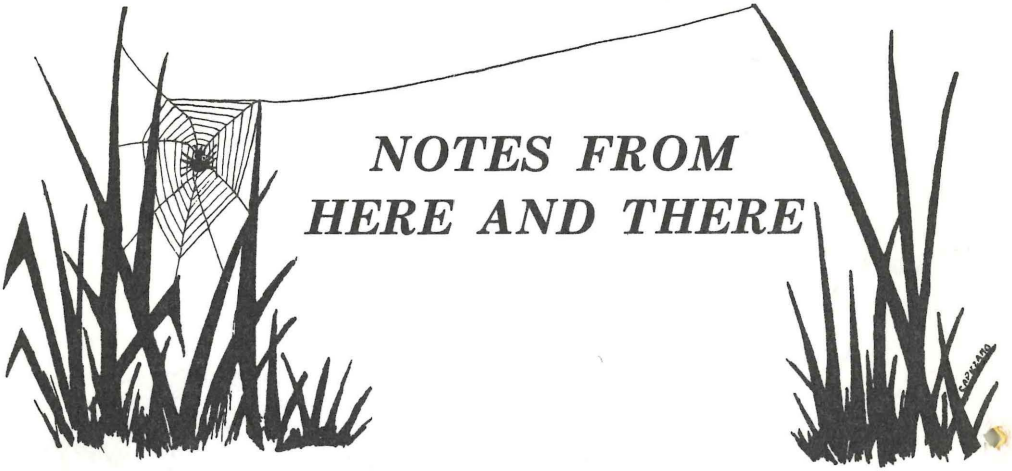


MARS, SKETCHED AT TELESCOPE, 400 X, 16" APERATURE, f/8, JUNE 11, 1967, AT MAYOR, ARIZONA. →

perienced observer may wait patiently for several hours to catch a glimpse of fine detail on the surface of Mars which is visible only during these moments of excellent seeing.

Finally, your own eye has a great effect on what you will see. Ideally one should observe Mars every possible evening throughout an opposition to see everything there is to see. First looks at Mars or any planet are usually disappointing, but with patience the eye gains experience and can see much more surface detail. Often the image is so bright as to be somewhat dazzling to the beginner.

Mars rises in the southeast one hour after sunset on August 1st and will be located in the constellation of Capricornus all month. It is reddish-orange and by far the brightest object in that part of the heavens. The closest approach to Earth is on August 10, but Mars will still be observable well into September.



NOTES FROM HERE AND THERE

MRS. LOUIS DARLING has accepted the invitation of the Board of Directors to be a Consultant to the Thames Science Center. The Center welcomes Mrs. Darling to this important position. Both the curator and the director look forward to working with Mrs. Darling in setting up the museum which bears her husband's name.

FRIENDS OF THE CENTER: Mrs. J. Martin Leatherman has become a Friend, and Miss Ruth Thomas has renewed her Friend membership.

TIDAL MARSHES OF CONNECTICUT has just been reprinted by the Connecticut Arboretum and is currently on sale in the Museum Store. Although legislation to protect the tidal marsh community has been enacted in Connecticut, more citizens must be made aware of this important natural resource. Please help by bringing this guide to the attention of your local school system, Conservation Commission and other civic groups.

THE NATURE FESTIVAL was a success from every point of view. The Science Center wishes to thank all those who worked so hard and especially Mrs. William Boyd, the Festival Chairman.

A SECRETARY-BOOKKEEPER has joined the Science Center on a full time basis. Mrs. Doris Facas began work last month and is gradually bringing everything up-to-date. We welcome her to Gallows Lane.

THE NEW TREASURER of the Board of Directors is Mr. Royce E. Gray. Mr. Gray, who is Vice President of the Hartford National Bank and Trust Company, is replacing Mrs. Robert Sullivan who recently resigned for personal reasons. Mrs. Sullivan has worked tirelessly as both Treasurer and bookkeeper for a long time. Her efforts on the Center's behalf are deeply appreciated, and we shall miss her on the Board of Directors.

TERN SIGHTINGS: Studies have been conducted for several years on breeding birds at Great Gull Island. If you see terns that have color bands on their legs, please contact the Center, 443-4295. Note the color of the band, when and where the bird was seen, and its behavior.

THE THAMES SCIENCE CENTER has been bequeathed approximately $5,000 from the estate of Marenda Holmes Sherman. The Science Center is grateful to have been included in Mrs. Sherman's will.

OTHER GIFTS TO THE CENTER INCLUDE:

A grant from the Conservation Committee of the East Lyme Junior Woman's Club to build a large aquarium.

A gift from the Zonta Club of New London in memory of Miss Elsie M. Fletcher of Birds of the Northern Forest and Birds of the Eastern Forest by J. F. Lansdowne and John A. Livingston. These beautifully illustrated volumes are a handsome addition to our library.

Mr. and Mrs. Earl Smith have donated two stuffed Pheasants, one Long Eared Owl and one Barred Owl to our collection of stuffed birds.

Although we are always grateful for any monetary gifts, we found particular pleasure in being included in the annual Connecticut College Student Organizations Fund.

A POLLUTION BUMPER STICKER IS A PARADOX!

DO YOU SMASH ALL YOUR TIN CANS AND SODA CANS BEFORE THROWING THEM AWAY? It saves much needed space.

A PICTURE TO COLOR

THE LARGE, GREEN PREYING MANTIS LIVES AMONG THE GOLDEN ROD AND GRASSES WHERE EGGS ARE LAID IN THE FALL.

CROSSWORD FOR KIDS

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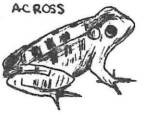
2.

3.

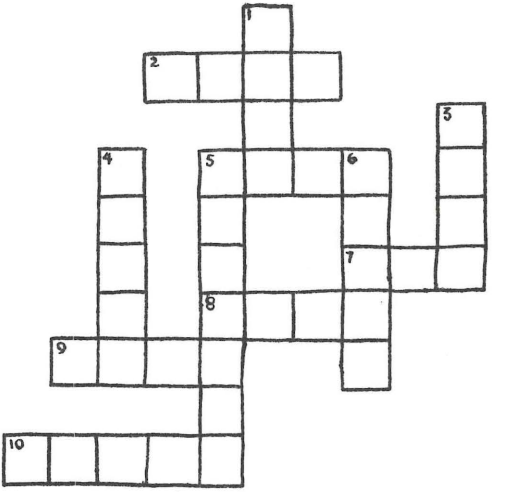
4.

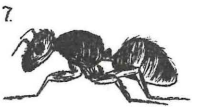
5. ACROSS 

5. DOWN

6.

NAME EACH PICTURE. WRITE THE NAME IN THE CORRECT BOXES OF THE PUZZLE.



7. 

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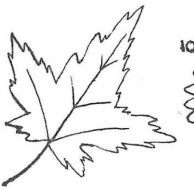
9. 

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BETWEEN THE TIDES

Text and Photo by Stephan Syz

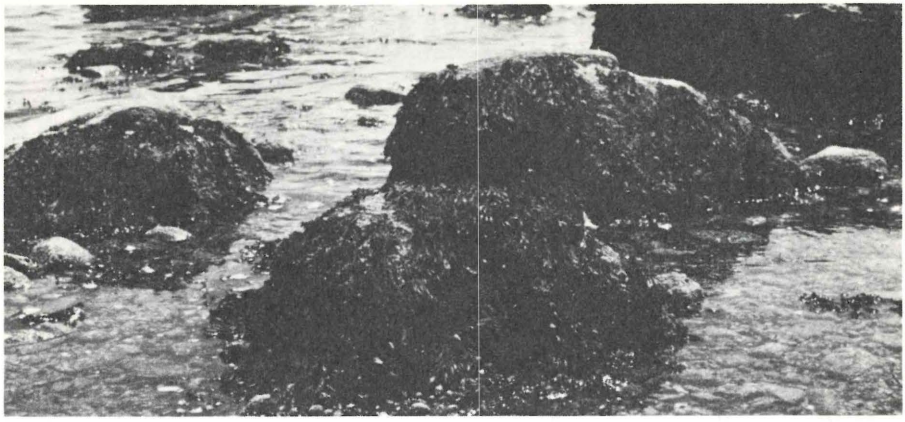
One of the most severe habitats of Earth is the rocky coast. Here waves pound, tides rise and fall, rains wash away salt while the next tide returns it, the sun beats down raising the temperature near 100 degrees and in the winter at low tide temperatures drop to zero only to return to 40 degrees with the next tide. Needless to say, the animals that live in the intertidal region must have some very special adaptations to cope with these conditions.

In the region covered by high tide and exposed by low tide or the littoral zone you will find animals such as barnacles, periwinkles, limpets and blue mussels. A hard outer covering or shell is the common protection of these animals.

When the tide has gone out, notice that the two valves of the shell of the blue mussel close together to make a perfect fit. If you attempt to dislodge one of these hard shelled animals you will also discover that they are tightly attached to the rock by strands called byssus threads. This is an adaptation which prevents them from being washed away.

While the tide is out, the single-shelled limpet that at high tide had been browsing on algae, returns to a specific spot, his "home" on the rock and pulls his conical shell against the stone, to make a tight fit.

Another animal of the intertidal zone, the periwinkle, browses among the rockweeds and algae when the tide is high. At low tide the periwinkle secretes a mucus which dries and cements his shell to the rock. The animal in the snail-like shell withdraws inside and closes a small round door or operculum behind it so that no liquid or air can enter or escape.



The barnacle, too, makes ready for the severe terrestrial conditions of low tide by closing its four white plates or doors.

At low tide, if you examine a rock sloping into the sea, you will discover distinct zones of life. Above the highest tide and above most spray grow little flat plants called lichens. These plants are actually a combination of algae and fungi living together. Below the lichens is a zone called the splash zone where very little if any life is to be found on the rocks. The occasional spray is not sufficient for algae, yet it is too much for the lichens. Next a band which looks black can be seen. This is green algae and blue-green algae which have the unusual property for algae of not dying when temporarily dried out by the sun. During the day insects able to dodge the waves may feed on detritus in this zone while at night small crustaceans feed here.

Next comes the littoral zone with barnacles and other crustaceans above and rockweed (with poppers) and Irish moss, used as a food by man. Below, at the low water mark, wide leafed kelp may be seen.

As the cooling waters of the next tide return, the rockweed is buoyed up by its bladders, the mussels separate their shells and begin to eat and breathe again, and the small molluscs relax their grip on the rock and begin moving about in search of food.

FROM THE DIRECTOR - - -

by Robert S. Treat

On the weekend of June 18-20 and on Saturday, June 26, the Center sponsored two expeditions as part of a new field ecology program for high school students. The Alpine Expedition climbed Mt. Washington in the White Mountains of New Hampshire under the leadership of the Executive Director, Dr. William Niering and Stephan Syz in cooperation with the Appalachian Mountain Club. Nineteen students climbed Lion Head Trail from Pinkham Notch Camp on Saturday to study the ecological relationships of plant life in the Alpine Zone. The group noted the transition forest up to timberline, small areas of Krummholz (dwarf trees) and on to the Alpine Zone where the Alpine Gardens were in full bloom. There the group saw several kinds of lichens and such flowers as the Alpine Azalea, Lapland Rosebay, Labrador Tea and a one-of-a-kind variation of Diapensia lapponica.

The Expedition continued to the 6,288 foot summit where they had the privilege of a talk by one of the four observers and a tour of Mount Washington Observatory including a detailed explanation of the weather instruments. The group observed more flowers on Bigelow Lawn near

Photo by S. Syz

Photo by S. Syz

the summit of Mt. Monroe, spent the night in Lake-of-the-Clouds hut and returned along the edge of Tuckerman's Ravine to the base Camp.

At 8:00 a.m. Saturday June 26, the Marine Expedition left Harrison's Landing to explore aquatic life along the southeastern shore. A plankton tow and dredge were used to obtain samples of life just below the surface and on the sea floor, while Dr. DeSanto demonstrated Scuba diving and brought up such invertebrates as pea crabs and a 15 year old oyster. The boat dropped anchor off a small island housing a gull colony. Here the group observed nests and used buckets and a seine net to gather different species of marine life. Collected and identified were sea walnuts (ctenophore) and microscopic animals growing on kelp called hydroids and ectoprocts. After lunch on the beach, the trip continued to Ocean Pond on Fishers Island. This pond is ideal for the marine observer since the tidal flow sends sea life in which can be easily collected and studied. The group remained here to snorkel, net and observe, and on the return trip, leaders Dr. and Mrs. Jerome P. Harkins identified the collections.

Both expeditions were considered highly successful by Center leaders and participants. The dual purpose of involving high school students in a Science Center activity and increasing their awareness of the sea and mountain environment was accomplished. An expansion of this field ecology program is planned.

MOLLUSCS IN YOUR BACKYARD

by Ruth M. Ritter

Aquatic habitats seem to be more likely places to find molluscs--clams, snails, and squid--than terrestrial areas. But don't forget slugs and the land snails which have developed lungs rather than gills. If you are the inquisitive type and delve into mysteries of the undersides of leaf mold and rotten wood, chances are that you've found a slug. Slugs are like snails but they have little or no shell. They lay down a trail of mucus and move over it with rippling muscular contractions.

Slugs eat decaying plant material as well as living plants. Some species are very damaging to crops. Most slugs are herbivores, but there is at least one carnivorous slug. It stretches itself out until it's slim enough to fit into earthworm burrows. If it finds a worm, it grabs its head with its "teeth" or radula and a battle ensues. The contest is hardly fair as the slug almost always wins and eats the worm to consummate just one of the myriad contests of life and death occurring in nature. The slug itself may soon become food for a bird, salamander, or small mammal.

The mating of these creatures is most peculiar. Each slug is both male and female, yet to mate and fertilize the eggs, two slugs are needed. When two find each other, they glide along underneath a leaf or branch until they each secrete a thread of mucus and hang from a strand. Mating occurs as they hang there! Following mating they drop to the ground and slide away to lay eggs. If you are observant, throughout the year you can find their clusters of pearl-like eggs under rotten plant material. When the eggs hatch the young are miniature adults which then live about $1\frac{1}{2}$ years.

What about their size? New England's slugs surely can't compare to Washington State's which can get to be 8 inches long!

FIELD NOTES

May 10 - July 10

Mystic, Stonington and Ledyard: Two UPLAND PLOVERS turned up in a field near Jerry Brown Road and LEAST FLYCATCHERS were seen at Lake-of-Isles on May 10th. A WHIP-POOR-WILL called at the Peace Sanctuary on the 11th. A CLAPPER RAIL and 3 SHARP-TAILED SPARROWS were flushed from a Mystic River salt marsh on the 15th. A TRAILL'S FLYCATCHER was sighted at the Assekonk Swamp and a BROAD-WINGED HAWK soared over N. Main St. in Stonington on the 23rd. Warbler migration was poor and late; WILSON'S WARBLER near Pequot Sepos rewarded persistent watchers. An adult male COOPER'S HAWK on the 24th of June in Old Mystic is good news anytime.

Barn Island: May 23 produced 6 LITTLE BLUE HERONS, 6 SNOWY and 2 COMMON EGRETS, 3 LOUISIANA HERONS, a LEAST BITTERN, 2 GLOSSY IBIS and a LONG-BILLED MARSH WREN. Nearly a month later on June 27 produced the same plus a BLACK SKIMMER and a YELLOW-CROWNED NIGHT HERON. Other good birds were TRAILL'S FLYCATCHER and a BARRED OWL sighted in broad daylight on June 5. During June on several late night trips to Barn Island up to 5 WHIP-POOR-WILLS and a VIRGINIA RAIL were heard. July 4th found a GRASSHOPPER SPARROW in a favorite field spot at Barn Island.

Lyme, Old Lyme and Essex: An ORCHARD ORIOLE in Old Lyme is just one of several reports this spring. A large warbler wave finally hit near Otter Cove with BLACKPOLLS, BLACKBURNIAN, TENNESSEE, and BAY-BREASTED arriving together on May 20th. On the 26th a WORM-EATING WARBLER was discovered in Lyme. LEAST TERNS were nesting on that date at Griswold Point. Also sighted were a BLACK SKIMMER and SEMIPALMATED PLOVER. A YELLOW-CROWNED NIGHT HERON apparently resides on the Blackhall River.

Devil's Hopyard: May 24th found a WOOD PEEWEE, a YELLOW-THROATED VIREO and a LOUISIANA WATER-THRUSH. The Hopyard is one of the best places to find WINTER WRENS, BLUE-GRAY GNATCATCHERS and the VIREO, all of which were seen on the 26th of May and June 13. In addition on the 13th a BROWN CREEPER, BLACKBURNIAN WARBLER and ACADIAN FLYCATCHER were found. The ACADIAN FLYCATCHER occurs at the eastern most point of its distribution in New England at the Hopyard.

Rhode Island Shoreline: A disabled OLDSQUAW first seen on May 16 is apparently summering at Napatree Point. May 16 also brought 20 ROSEATE TERNS and nearly 40 were found by the 31st. Four BRANT and 25 RUDDY TURN-STONES were late on the 31st and 2 WHITE-RUMPED SANDPIPERS on June 22 were really late at Napatree. COMMON GALLINULES at Quonochontaug on May 22 were the only ones reported. Was the WHIMBREL sighted there on June 25 early or late?

New London and Waterford: Good weather brought these birds to Mitchell Woods on May 11: SCARLET TANAGER, CRESTED FLYCATCHER, RUSTY BLACKBIRD, SOLITARY VIREO as well as BLACK-THROATED BLUE, PARULA, and MAGNOLIA WARBLERS. May 11th brought a CANADA WARBLER, May 13 a NASHVILLE WARBLER, May 14th a singing GRAY-CHEEKED THRUSH and INDIGO BUNTING, and May 16th a GOLDEN-WINGED WARBLER to the Arboretum. Some interesting nests found in the Arboretum were a HUMMINGBIRD on June 9, a LOUISIANA WATERTHRUSH on June 27 and an OVENBIRD on July 8 with one egg and one young. A HOODED WARBLER first appeared in the Arboretum on May 16 and one started calling near TSC's center on July 6. Is this bird setting up a new territory at this late date? A single CLIFF SWALLOW on May 20th at Harkness Park was the second report this spring.

Contributors to this column were: Mr. and Mrs. Kenneth Bates, Grace Bissell, Mrs. William Boyd, Martha Capizzano, Bob Dyer, Helen Gilman, Walter Moran and Bill Ryan.

Photo by Dade Thornton

JUVENAL COMMON EGRETS

One of the species of white birds in the heron family saved from extinction by plume hunting, the Common Egrets have increased their range into the northeast in the recent past, and now breed in coastal wetlands.

NATURALIST NOTEBOOK

Published by the

THAMES SCIENCE CENTER

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MARTHA M. CAPIZZANO
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- ☐ Supporting $25
- ☐ Friend of the Center $50
- ☐ Organization $15
- ☐ Junior (under 16) $4
- ☐ A special gift toward support of the Science Center effort is included $ _____

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